

**MPR 8500.1
REVISION K**

**EFFECTIVE DATE: August 19, 2020
EXPIRATION DATE: August 19, 2025**

MARSHALL PROCEDURAL REQUIREMENTS

AS01

MSFC ENVIRONMENTAL ENGINEERING AND OCCUPATIONAL HEALTH PROGRAM

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DOCUMENT HISTORY LOG

Status (Baseline/ Revision/ Change/ Revalidation/ Canceled)	Document Revision/ Change	Effective Date	Description
Baseline		4/8/2002	This MPG replaces MPG 8870.1, "Environmental Management Program." NASA Headquarters changed the numbering system for environmental documents.
Revision	A	11/25/2002	Deleted the reference to MWI 8540.1, "Pollution Prevention," in Section P.4. Added pollution prevention and recycling information to Section 3.6. Replaced AD02 with AD60 in 3.14.2.
Revision	B	10/22/2004	This revision is in response to an action from NASA Headquarters requiring specific verbiage and updating document references.
Revision	C	12/21/2005	Updated Section 3.10 to reflect new requirements in the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) program. Added appropriate definitions in Section 1.2. Updated document throughout to reflect organization change from Environmental Engineering and Management Office (AD10) to Environmental Engineering and Management Office (AS10). Updated Section 3.3.2 to be consistent with 40 CFR 112.7(c) and 40 CR 112.7(h) (1). Updated Section 3.13 regarding wetland permitting procedures. Deleted significant portions of Section 3.9 regarding procedures for asbestos and lead since that responsibility lies within Occupational Medicine & Environmental Health Services (AS60). AS60 is drafting a new directive with asbestos requirements.
Revision	D	12/19/2006	Updates training requirements. Removes the requirement to recycle. Removes the requirement in 3.2.2.2 to appoint two alternate contacts for each waste container. Updates organization names. Deletes section on Historic Preservation since this is an AS20 responsibility.
Revision	E	11/5/2007	Clarified definition of small spills (1.1.21). Deleted Table 3.6 which contained references to old Executive Orders. Provided reference to the new Executive Order regarding pollution prevention in Section 3.6. Moved Guidance in 3.13 to Appendix Z. Added NPR 1441.1 and MPR 1440.2 to P.4 Applicable Documents. Modified chemical spill information to point to MWI 8550.5 "Chemical Management." Revision E addresses findings of NCR 922.
Revision	F	8/22/2008	Revised the Applicability statement to address the applicability of this directive to MSFC. This document is not applicable to Michoud Assembly Facility. Revised training information in section 3.1 since training courses and modules changed. [On 12/19/08, an administrative change made in 4.2, 4.3 and 4.4 at the request of the OPRD who coordinated changes with the Center Records Manager.]
Revision	G	6/14/2010	Made several editorial changes. Revised Applicability statement in accordance with guidance from Chief Counsel. Revised Records section to reference the AS10 List of Records. Replaced "affirmative procurement" wording with "green purchasing." Updated "Applicable Documents." Added definition of corrugated cardboard. Updated 3.1 Environmental Training. Updated 3.8.2.3 to provide more accurate info regarding storm water and wastewater requirements. Added MSFC Form 4072 to Section 4 Records. Changed 3.1 to reference web link for training instead of listing out all courses. Moved List of Acronyms in Section 1 to Appendix B in accordance with MWI 1410.1 and Definitions to Appendix A in accordance with NPR 1400.1, 3.7.4 k. Added reference to MPR 1860.2, "Nonionizing Radiation Safety" to P.4 and 3.15. Added reference to "Final Land Use Control Remedial Design Project for Operable Unit 3:

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			Groundwater, MSFC, November 2009' in P.5. Changed old Appendix A to Appendix Z since it is labeled "Guidance."
Revision	H	8/16/2011	Placed parentheses around all web links to ensure functionality. Revised 3.12 from "Threatened and Endangered Species" to the broader "Natural Resources." Changed 3.12.2 from "Responsibilities of MSFC User Organizations" to "Responsibilities of Facilities Management Office" since FMO is the only organization impacted. Added 3.14 Cultural Resources section. Deleted 3.16 Radiation since all requirements are contained within MPR 1860.1, MPD 1860.2, and MPR 1860.2.
Revision	I	1/16/2013	Total re-write. Occupational Health and Medicine were added to this document to incorporate both Occupational Health and Environmental Engineering into one document within the new template. Title was changed from MSFC Environmental Management Program to MSFC Environmental Engineering & Occupational Health Program. The Applicability statements, documents, and forms were also updated. A responsibility statement was added for the Facility Management Office. Also, all Chapters were updated with revised introductions and requirements. Re-formatted to comply with new required template per MPR 1410.2J & as instructed in MWI 1410.1F.
Change	1	1/17/2013	On 1/17/13, at the request of the OPRD, an administrative change was made to cover and header to revise title from "MSFC Environmental Engineering and Occupational Health" to "MSFC Environmental Engineering and Occupational Health Program."
Change	2	7/19/2013	On 7/19/13, at the request of the OPRD, the following administrative changes were made: Removed MPR 1040.3 and replaced with IMSC-Plan-1040.3 at P.4, 5.1, Chapter 14, and 14.1.1. Corrected title of AS10-OI-050 at P.4 and 12.1. Completed the incomplete sentence in Chapter 20 which describes existing services (this resulted in changes at P.4, Chapter 20, and Appendix B).
Change	3	12/30/2014	On 12/30/14, at the request of the OPRD, an administrative change was made to update the title of MWI 8550.2 and remove references to MWI 8550.3 at P.4 and 7.1.
Revision	J	12/16/2015	Corrections to Section P.4 Applicable Documents and Forms. Minor changes to wording in Chapter 6 Air Emissions Compliance, Chapter 10 CERCLA, Chapter 12 Cultural Resources, and Chapter 20 Occupational Medicine. Updated links.
Revision	K	8/19/2020	Deleted references in P.4 that were not referenced within the text. Changed "storm water" to "stormwater" throughout for consistency. Made minor wording edits throughout the environmental sections. No changes to the Occupational Health sections.

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PREFACE

P.1 PURPOSE

- a. To provide general procedures and requirements in support of NASA Policy Directive (NPD) 8500.1 and Marshall Policy Directive (MPD) 8500.1 in order to achieve the environmental goals of NASA and MSFC and to meet federal, state, and local environmental regulatory requirements.
- b. To provide general procedures and requirements in support of NPD 1800.2 in order to achieve the occupational health goals of NASA and MSFC and to meet federal, state, and local occupational health requirements.

P.2 APPLICABILITY

- a. This Marshall Procedural Requirements (MPR) applies to Center personnel, programs, projects, and activities, including contractors and resident agencies to the extent specified in their respective contracts or agreements. (“Contractors,” for purposes of this paragraph, include contractors, grantees, Cooperative Agreement recipients, Space Act Agreement partners, or other agreement parties.)
- b. This MPR does not apply to Michoud Assembly Facility (MAF).
- c. This MPR applies the following: all mandatory actions (i.e., requirements) are denoted by statements containing the term “shall.” The terms: “may” or “can” denote discretionary privilege or permission; “should” denotes a good practice and is recommended, but not required; “will” denotes expected outcome; and “are/is” denotes descriptive material.
- d. This MPR applies the following: all document citations are assumed to be the latest version unless otherwise noted.

P.3 AUTHORITY

- a. NPD 1800.2, NASA Occupational Health Program
- b. NPD 8500.1, NASA Environmental Management
- c. MPD 8500.1, MSFC Environmental Management Policy

P.4 APPLICABLE DOCUMENTS AND FORMS

- a. Executive Order 12114, Environmental effects abroad of major Federal actions
- b. 36 C.F.R. 60.4 §§ 106 and 110(a)(2) of the National Historic Preservation Act
- c. 40 C.F.R. 68, Clean Air Act Amendments of 1990

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- d. 42 C.F.R Part 73, Select Agents and Toxins
- e. Clean Water Act of 1977 (Amendment to the Federal Water Pollution Control Act of 1972)
- f. The Emergency Planning and Community Right-to-Know Act (EPCRA) of 1986
- g. Toxic Substance Control Act of 1976
- h. NPR 1800.1, NASA Occupational Health Program Procedures
- i. NPR 7120.5, NASA Space Flight Program and Project Management Requirements
- j. NPR 8580.1, NASA National Environmental Policy Act Management Requirements
- k. MPD 1200.3, Delegations of Authority for Marshall Space Flight Center (MSFC)
- l. MPR 1840.4, MSFC Asbestos Program
- m. MPR 3410.1, Training
- n. MWI 1800.1, MSFC Occupational Medicine
- o. MPR 1810.2, Automated External Defibrillator (AED) Program
- p. MWI 1840.1, Industrial Hygiene Programs
- q. MWI 8540.2, Green Purchasing Program
- r. MWI 8550.1, Waste Management
- s. MWI 8550.2, Stormwater and Wastewater Management
- t. MWI 8550.4, Air Emissions Compliance
- u. MWI 8550.5, Hazardous Material Management
- v. MWI 8621.1, Mishap and Close Call Reporting and Investigation Program
- w. MPR 8715.1, Marshall Safety, Health, and Environmental (SHE) Program
- x. MWI 8715.15, Ground Operations Safety Assessment Program
- y. MWI 8715.12, Safety, Health, and Environmental Finding Tracking System (SHEtrak)
- z. AS10-OI-051, Natural Resources and Wetland Permitting

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- aa. AS20-OI-012, MSFC Digging Permits
- bb. MCP 1040.2, MSFC Emergency Plan
- cc. MSFC Title V Air Permit (<https://explornet.msfc.nasa.gov/community/msfc/office-of-center-operations/as10>)
- dd. MSFC Form 4464, CERCLA Site Access Control Checklist
- ee. MSFC Form 4243, Medical Release for Treatment of a Minor
- ff. Redstone Arsenal Regulation 200-7
- gg. Final Land Use Control Remedial Design Project for Operable Unit 3: Groundwater, MSFC, May 2010
- hh. Integrated Cultural Resources Management for MSFC

P.5 MEASUREMENT/VERIFICATION

Measurement/verification of compliance with environmental and occupational health requirements is accomplished through audits and inspections. Findings are entered into SHEtrak in accordance with MWI 8715.12.

P.6 CANCELLATION

MPR 8500.1J, MSFC Environmental Engineering and Occupational Health Program, dated December 16, 2015.

Electronically approved by

Jody Singer
Director

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CHAPTER 1. Responsibilities

1.1 The Marshall Space Flight Center (MSFC) Director is responsible for all environmental compliance activities of the Center including its component installations (e.g., MAF).

NOTE: Although this MPR is not applicable to MAF, the MSFC Director is still ultimately responsible for environmental compliance at MAF since MAF is a component facility of MSFC. The MAF Chief Operating Officer (or designee) reports environmental compliance to the MSFC Director on an annual basis. MAF has its own set of environmental directives.

1.2 The Office of Center Operations (AS01), under the delegated authority of the MSFC Director, is responsible for the MSFC Environmental Compliance Program in accordance with MPD 1200.3.

1.3 Environmental Engineering and Occupational Health (EEOH) Office has overall environmental responsibilities as the Center focal point for environmental activities. Under the delegated authority of the Director, AS01, EEOH provides continuous surveillance, review, evaluation, and assurance of environmental activities at all levels throughout the Center. Under this authority, EEOH has control for approval or cessation of all phases of acquisition and operation of hazardous or potentially-hazardous facilities, systems, or equipment that may result in noncompliance with regulatory standards.

1.4 All MSFC onsite personnel, through the directors/managers of user organizations, are responsible for ensuring that organizational plans and procedures are maintained to implement and comply with the Federal, State, and local environmental laws and regulations.

1.5 Facilities Management Office (FMO) is responsible for coordinating with EEOH on specific activities described in the following chapters.

1.6 Offsite contractors are responsible for compliance with confined space entry requirements defined within this directive.

1.7 Chief, Redstone Arsenal Fire Department is responsible for compliance with confined space entry requirements defined within this directive.

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CHAPTER 2. Environmental and Occupational Health Training

To meet federal, state, and National Aeronautics and Space Administration (NASA) regulations, ordinances, and guidelines, all personnel involved in hazardous waste operations and transportation, chemical management, stormwater and wastewater management, oil handling, air emissions compliance, chemical/oil spill response activities, chemical use, high noise areas, confined spaces, bloodborne pathogens, heavy metals, asbestos, carcinogens, chemical laboratories, respiratory protection, and ergonomics are required to complete the necessary training courses. EEOH ensures that appropriate environmental and occupational health training is available to all MSFC onsite personnel.

2.1 MSFC onsite personnel shall complete all training identified by the SHE Training Assessment in accordance with MPR 3410.1.

NOTE: The SHE Training Catalog provides descriptions for Environmental Engineering (300 level courses) and Occupational Health (200 level courses) training (<https://sharepoint.msfc.nasa.gov/sites/sma/general/shetraining/catalog/Lists/courses/Quicklist.aspx>).

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CHAPTER 3. Waste Management

Waste management compliance includes activities pertaining to hazardous waste, special waste, universal waste, used oil, and debris. The programs under Resource Conservation and Recovery Act (RCRA) focus on three waste categories known as Subtitles C, D, and I. Subtitle C is the hazardous waste program that regulates hazardous waste (including special waste and universal waste) from origination to its ultimate disposal. Subtitle D is the solid waste program that includes minimum Federal technical standards and guidelines for State solid waste plans. Subtitle I is the UST program that regulates underground tanks that contain petroleum or hazardous substances, as defined under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). EEOH manages waste activities at MSFC in accordance with applicable federal, state, and local laws and regulations as referenced in Marshall Work Instruction (MWI) 8550.1.

3.1 MSFC onsite personnel shall follow waste management instructions in accordance with MWI 8550.1.

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CHAPTER 4. Hazardous Materials Compliance

The Emergency Planning and Community Right-to-Know Act (EPCRA) of 1986 establishes requirements for the reporting of hazardous and toxic chemicals. Sections 311 and 312 of EPCRA require facilities to report the locations and quantities of chemicals stored onsite to state and local governments to help communities prepare for chemical spill response and similar emergencies. Section 313 of EPCRA requires facilities to report the use or production of toxic chemicals above specific thresholds. EEOH maintains an inventory of chemicals used/stored onsite in accordance with applicable federal, state, and local laws and regulations and annually reports the MSFC chemical inventory and toxic release inventory to the Redstone Arsenal Emergency Planning Committee, Environmental Protection Agency (EPA), and Alabama Department of Environmental Management (ADEM).

4.1 MSFC onsite personnel shall follow chemical management instructions in accordance with MWI 8550.5.

4.2 MSFC onsite personnel shall follow Appendix F “Shelf Life of Unstable Chemicals” for guidance on maximum amount of time a material may be kept.

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CHAPTER 5. Chemical Spills

EEOH manages chemical spills at MSFC in accordance with federal, state, and local laws and regulations. In accordance with EPCRA, EEOH notifies the local emergency planning committee (Redstone Arsenal Emergency Planning Committee) and the State Emergency Response Commission, if there is a release into the environment of a hazardous substance that is equal to or exceeds the minimum reportable quantity set by regulations. In addition, EEOH submits a written follow-up notice to the Redstone Arsenal Emergency Planning Committee and the State Emergency Response Commission after the release. The follow-up notice updates information included in the initial notice and provides information on actual response actions taken and advice regarding medical attention necessary for citizens exposed.

5.1 MSFC onsite personnel shall follow chemical spill instructions in accordance with MWI 8550.5.

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CHAPTER 6. Air Emissions Compliance

The Clean Air Act (CAA) is the comprehensive federal law that regulates air emissions from area, stationary, and mobile sources. Title V of the CAA requires sources of air emissions to be evaluated and possibly permitted. MSFC is a CAA Title V major source of air emission. As such, emission sources such as paint booths, sandblast facilities, fuel-burning equipment, boilers, fuel tanks, generators, surface coating, vapor cleaning, hand wipe cleaning, pipe cleaning, gasoline stations, propulsion system testing, abrasive blasting, air strippers, and degreasers are required to have air permits. EEOH manages outdoor air emissions at MSFC in accordance with applicable Federal, state, and local laws and regulations.

6.1 MSFC onsite personnel shall follow air compliance instructions in accordance with MWI 8550.4.

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CHAPTER 7. Stormwater and Wastewater Compliance

The Clean Water Act (CWA) is a 1977 amendment to the Federal Water Pollution Control Act of 1972, which sets the basic structure for regulating discharges of pollutants to waters of the United States. The law authorizes EPA to establish effluent standards for point sources on an industry basis (technology-based) and continues requirements to set water quality standards for surface waters. The CWA makes it unlawful for any person to discharge any pollutant from a point source into navigable waters unless a National Pollutant Discharge Elimination System (NPDES) permit is obtained under the Act. The CWA provides for the delegation by EPA of many permitting, administrative, and enforcement aspects of the law to state governments. MSFC maintains a water quality compliance program to achieve and maintain compliance with the CWA and EPA and State water quality requirements. The permit, which is issued by ADEM and renewed at 5-year intervals, regulates MSFC stormwater runoff management. EEOH manages stormwater and wastewater compliance at MSFC in accordance with applicable Federal, state, and local laws and regulations.

7.1 MSFC onsite personnel shall follow stormwater and wastewater compliance instructions in accordance with MWI 8550.2.

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CHAPTER 8. Toxic Substance Management

The Toxic Substance Control Act (TSCA) of 1976 was enacted by Congress and authorizes EPA to place controls on the manufacture, distribution and disposal of thousands of industrial chemical substances. EPA evaluates the risk of chemical substances currently used in commerce and newly developed substances. Under TSCA, EPA can impose a variety of regulatory requirements on entities, including reporting or testing. MSFC addresses applicable regulations regarding asbestos, lead, and Polychlorinated Biphenyl (PCB) management to prevent illness to employees and damage to the environment from the use, removal, and disposal of toxic substances.

8.1 MSFC onsite personnel shall follow toxic substance compliance instructions in accordance with MPR 1840.4, MWI 1840.1, and applicable Federal, state, and local laws and regulations.

8.2 FMO shall:

8.2.1 Ensure notification of scheduled asbestos abatement to facility occupants, the building manager, and/or the SHE representatives as applicable.

8.2.2 Ensure that asbestos-containing material that may be disturbed in any renovation and maintenance activities is identified through support from EEOH personnel in the scope of work and removed only by qualified asbestos abatement or maintenance workers.

8.3 MSFC onsite personnel shall comply with MPR 1840.4 and immediately report environmental concerns related to asbestos, lead, and PCBs to EEOH.

8.4 General Information and Requirements.

8.4.1 Lead coatings on scrap metal are acceptable for salvage at recycling centers.

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CHAPTER 9. Pesticides

The primary focus of the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) is to provide Federal control of pesticide distribution, sale, and use. EPA has been delegated authority under the FIFRA to study the consequences of pesticide usage and to require users (farmers, utility companies, and others) to register when purchasing pesticides. Through later amendments to the law, applicators of pesticides are required to meet certification standards. FIFRA requires that all pesticides used in the United States be registered (licensed) by EPA. Registration ensures that pesticides are properly labeled and, if used in accordance with specifications, do not cause unreasonable harm to the environment. MSFC maintains safe, effective, and environmentally-sound pest management pursuant to the FIFRA to prevent or control pests that may adversely impact the health of personnel or damage structures or property.

9.1 FMO shall provide Safety Data Sheets (SDSs) to EEOH for the pesticides used at MSFC.

9.2 FMO shall ensure that all pest control is performed in accordance with Federal, state, and local environmental laws and regulations.

9.3 FMO contractor shall maintain all application records onsite and make these records readily available for inspection by Government and other environmental inspectors at all times.

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CHAPTER 10. CERCLA

Congress enacted CERCLA, commonly known as Superfund, on December 11, 1980. CERCLA established prohibitions and requirements concerning closed and abandoned hazardous waste sites; provided for liability of persons responsible for releases of hazardous waste at these sites; and established a trust fund to provide for cleanup when no responsible party could be identified. The guiding principal of the MSFC CERCLA program is the protection of human health and the environment. The program consists of actions that address: (a) potential releases that may contribute to offsite migration, primarily through ground water; (b) onsite releases that may have a potential for exposure to onsite workers; and (c) the most environmentally sensitive areas at MSFC. The goals are to: (a) investigate and eliminate risks to human health and the environment; (b) protect and satisfy the public; (c) use public funds responsibly; (d) meet regulatory requirements; and (e) minimize adverse effects on the NASA mission. EEOH provides overall management of environmental sites and central coordination of the environmental site access control program at MSFC. All entry onto environmental sites or activities adjacent to these sites which may impact the current or future contaminant nature, extent, or migration shall be controlled and managed to ensure compliance with State and Federal environmental laws and regulations.

10.1 MSFC onsite personnel shall:

10.1.1 Notify EEOH of any potentially-contaminated site(s) discovered within one day of discovery so that EEOH can notify EPA. The EPA maintains the list of contaminated sites at MSFC.

10.1.2 During planning efforts and where soil or groundwater disturbance is involved, contact EEOH to coordinate the construction, demolition, modification, maintenance, landscaping, and land use alterations of facilities within 100 feet of CERCLA site locations. Obtain an MSFC Form 4464, CERCLA Site Access Control Checklist, prior to work activities.

10.1.3 During construction activities, notify EEOH of unidentified odors, discoloration, or any suspected areas of contamination. Call 911 for reporting suspected dangerous situations.

10.2 General Information and Requirements.

10.2.1 Comply with Requirements for Access to Environmental Sites, which include CERCLA sites (NASA and Department of Army (DA)) and environmentally-restricted sites. The map for these sites is maintained at (<https://explornet.msfc.nasa.gov/docs/DOC-21489>).

10.2.2 Where soil or groundwater disturbance is involved, all organizations shall coordinate with EEOH (as specified below) prior to beginning any of the following activities on or adjacent to environmental sites: landscaping; land use alterations; construction and/or demolition work, including construction of facilities; local projects; and maintenance activities.

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10.2.3 For NASA environmental sites, organizations shall request a completed MSFC Form 4464, CERCLA Site Access Control Checklist, from EEOH.

10.2.4 For Army environmental sites, organizations shall request that EEOH coordinate with the DA to provide an “Environmental Site Work Plan Evaluation Checklist” described in Redstone Arsenal Regulation 200-7.

10.2.5 For emergency situations that require digging, such as repairing a leaking pipe on either NASA or DA environmental sites, it may not be feasible to coordinate with EEOH prior to addressing the emergency. In these situations, the organizations shall consult the map of environmentally restricted sites. Green shaded sites are the DA responsibility and require coordination prior to work. All other sites are NASA responsibility and emergency work can be performed.

10.2.6 Based on the resulting determination, if the worksite is not a DA site, maintenance work shall proceed as necessary with appropriate controls.

10.2.7 During emergency maintenance procedures, workers shall replace excavated soil back into the original location after the work is completed, ensuring that the excavated soil is not removed from the site.

10.2.8 Organizations shall notify EEOH of the emergency maintenance work performed on the affected environmental site immediately within normal business hours or by the end of the next business day for after-hours or weekend work, by calling 256-544-4246.

10.2.9 Organizations shall ensure that personnel requiring access to environmental sites to disturb the soil or have contact with groundwater have appropriate Hazardous Waste Operations and Emergency Response (HAZWOPER) training (SHE 308) commensurate with the work being performed.

10.2.10 MSFC is prohibited from the installation of wells to provide water for human consumption, industrial processes, and agricultural purposes per the “Final Land Use Control Remedial Design Project for Operable Unit 3: Groundwater, MSFC, May 2010.” The latest version of this document is available by contacting EEOH at 544-4246.

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CHAPTER 11. NEPA

The National Environmental Policy Act (NEPA) directs that all Federal agencies have a continuing responsibility to minimize adverse environmental impacts and to preserve and enhance the environment as a result of implementing federal plans and programs. Before an action is taken, NEPA requires NASA to consider environmental values in the planning of Agency actions and activities that may have an impact upon human health and the environment. NEPA directs that NASA consider alternatives to its proposed activities and requires that environmental factors be considered alongside the technical and economic considerations that are normally incorporated into NASA decision making. NEPA also requires that the information be available to NASA decision makers in a timely manner to enable examination of the environmental consequences of the proposed action or activity being considered, and that those environmental considerations be available to the public as well as to other Federal, state, and local agencies. NASA Procedural Requirements (NPR) 8580.1 and Executive Order 12114 provide specific instructions for complying with NEPA. EEOH manages the NEPA program at MSFC in accordance with Federal, state, and local environmental laws and regulations.

11.1 MSFC onsite personnel shall:

11.1.1 Comply with NEPA in accordance with NPR 8580.1.

11.1.2 At the onset of a program or project, complete the NEPA Construction Preliminary Evaluation or NEPA Operational Preliminary Evaluation (contact EEOH to obtain the latest version) and submit the checklist to EEOH.

11.1.3 Consult with EEOH to determine appropriate requirements to meet NEPA regulations and NPR 8580.1. (Also see Appendix G, paragraph 3.11 and Appendix H, paragraph 3.12, of NPR 7120.5 which further specifies compliance with the NEPA process.)

11.1.4 At the onset of a program or project, program managers shall consult with EEOH for guidance in satisfying NEPA requirements.

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CHAPTER 12. Cultural Resources

NASA's Cultural Resources Management (CRM) program is an Agency-wide program designed to manage historic assets owned by NASA and archeological resources that can be impacted by NASA's mission. "Historic assets" are historically significant to the local community, state, or to the entire country and deemed worthy of preserving. "Archeological resources" are any material remains of past human life or activities of archaeological interest. Under the CRM Program at MSFC, site-wide surveys have been completed to identify and document historical and archaeological resources within the MSFC boundary and to provide recommendations for those resources eligible or potentially eligible for inclusion in the National Register of Historic Places (NRHP) pursuant to criteria set forth in 36 C.F.R. 60.4 Section 106 and 110(a)(2) of the National Historic Preservation Act. Currently, FMO manages the cultural resources program and historic properties at MSFC in accordance with federal, state, and local environmental laws and regulations. EEOH assists the FMO with management of archaeological resources.

12.1 EEOH and FMO shall follow the cultural resources program instructions in accordance with the document titled, Integrated Cultural Resources Management for MSFC. The latest version of this document is available within the NASA Environmental Tracking System (NETS).

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CHAPTER 13. Natural Resources

Natural Resources include wildlife, plants, wetlands, floodplains, invasive species, and Threatened and Endangered (T&E) species. The Endangered Species Act (ESA) provides a program for the conservation of threatened and endangered plants and animals and their habitats. The U.S. Fish and Wildlife Service (USFWS) of the Department of the Interior maintains the list of threatened and endangered species. The law prohibits any action, administrative or real, that results in a “taking” of a listed species or that adversely affects habitat. MSFC seeks to protect threatened and endangered species, both flora and fauna. MSFC is committed to managing its natural resources by protecting, preserving, and enhancing the quality of the environment while conducting its primary mission. MSFC has developed a Natural Resources Management Plan (NRMP) to manage its ecosystems onsite. The goals of the NRMP include sustainability of lands for mission use; protection of natural resource assets; and compliance with relevant federal regulatory requirements. EEOH manages the natural resources program at MSFC in accordance with Federal, state, and local environmental laws and regulations.

13.1 EEOH and FMO shall follow the natural resources program instructions in accordance with AS10-OI-051.

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CHAPTER 14. Ordnance and Chemical Warfare Material

MSFC is committed to ensuring that human health, environmental, and safety concerns are addressed in the event that Unexploded Ordnance (UXO) or Chemical Warfare Material (CWM) is discovered. EEOH maintains a current map of known UXO/CWM in coordination with the U.S. Army. Additionally, EEOH signs off on all appropriate dig permits obtained through the FMO in accordance with AS20-OI-012, MSFC Digging Permits. EEOH also routes all dig permits with UXO/CWM impacts through the U.S. Army for concurrence.

14.1 MSFC onsite personnel shall not conduct any operations that involve disturbing the soil, without approval from EEOH.

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CHAPTER 15. Sustainability

Sustainability provides a cost-effective approach to environmental management by executing environmental, social, and financial processes in ways that meet existing mission objectives without compromising resources needed for future generations. Sustainability improves worker health and safety, protects the environment, helps maintain facility compliance with environmental regulations, and saves resources. The MSFC goal is to take action now to promote, preserve and enhance sustainable practices in all aspects of our mission, striving to lead by example in all we do. Sustainability includes source elimination or reduction, material replacement or substitution, green purchasing, recycling, electronic stewardship, sustainable building, and conservation of fuel, energy, and water.

15.1 MSFC onsite personnel are required to comply with laws and regulations governing sustainability in accordance with instructions provided in MWI 8540.2.

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CHAPTER 16. Respiratory Protection

Under the respiratory protection program at MSFC, the goal is to provide a program that aids in the control of those occupational diseases caused by breathing air contaminated with harmful dusts, fogs, fumes, mists, gases, smokes, sprays, or vapors. The primary objective is to prevent atmospheric contamination. This is accomplished by accepted engineering control measures (for example, enclosure or confinement of the operation, general and local ventilation, and substitution of less toxic materials). When effective engineering controls are not feasible, or while they are being instituted, only National Institute for Occupational Safety and Health (NIOSH)-approved respiratory protection devices are acceptable for use.

16.1 MSFC onsite personnel shall follow instructions for respiratory protection in accordance with MWI 1840.1.

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CHAPTER 17. Confined Space Entries

The goal of the MSFC confined space entry program is to establish requirements for practices and procedures to protect employees from the hazards of entry into permit-required confined spaces. Entering and working in confined spaces is a high-risk job. It is crucial that all employees involved in a confined space entry understand the potential hazards and strictly adhere to the work practices and entry procedures. Confined spaces include areas such as underground vaults, tanks, storage bins, manholes, pits, silos, process vessels, and pipelines.

17.1 MSFC onsite personnel shall follow instructions for confined space entries in accordance with MWI 1840.1.

17.2 FMO, or designated representative, shall:

17.2.1 When permit-required confined spaces have to be entered include notification in the statement of work that:

17.2.1.1 Permit-required confined space entry is required by the contractor.

17.2.1.2 A permit-required confined space program meeting the requirements of 29 Code of Federal Regulations (CFR) Part 1910.146 shall be submitted for approval by EEOH prior to start of work.

17.2.1.3 All necessary equipment including atmospheric monitoring required to comply with 29 CFR Part 1910.146 shall be provided by the contractor.

17.2.2 For operations under their authority involving multiple contractors, coordinate entry operations with the subcontractor(s) and other employees when employees of more than one employer work in or near the permit-required spaces to assure the work performed by one employer does not endanger the employees of another employer.

17.3 The Chief, Redstone Arsenal Fire Department, or designated representative, in accordance with the Interservice Support Agreement between MSFC and the Army Material Command (AMCOM), provides the following:

17.3.1 Confined space rescue services in the event of a rescue emergency.

17.3.2 Trained rescue personnel for confined space rescues per 29 CFR Part 1910.146.

17.3.3 Notifications to the MSFC onsite emergency medical services contractor of rescue emergencies and pre-entry notifications.

17.4 Offsite Contractors shall:

17.4.1 Obtain information regarding confined space hazards from the contracting organization.

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17.4.2 Ensure and certify in writing to the contracting organization that employees have received the appropriate training.

17.4.3 Coordinate entry operations with the contracting organization, EEOH and Safety & Mission Assurance (SMA).

17.4.4 Provide to MSFC EEOH and SMA a completed confined space entry procedure for approval prior to commencement of task.

17.4.5 Inform the contracting organization of any hazards confronted or created in confined spaces.

17.4.6 Provide all required equipment to safely perform confined space entries such as retrieval devices, air ventilating equipment, lighting equipment, personal protection equipment, air monitoring (O₂, Lower Explosive Limit (LEL), toxics) instrumentation, and respiratory protection equipment, etc.

17.4.7 Ensure all equipment is operable and in a well-maintained condition.

17.4.8 Ensure all test equipment and instrumentation used is accurate and properly calibrated with calibration records provided to EEOH or SMA upon request.

17.4.9 Follow all applicable requirements of this work instruction and Occupational Safety and Health Administration (OSHA) regulations.

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CHAPTER 18. Ergonomics

The goal of the MSFC ergonomics program is to establish an effective program to help identify and control hazards that are reasonably likely to cause or contribute to work-related musculoskeletal disorders (WMSDs). There are six basic elements to the MSFC ergonomics program including management leadership and employee participation, reporting and responding to WMSDs, identifying potential risks during job hazard analyses, training, medical management and program evaluation.

18.1 MSFC onsite personnel shall follow instructions for ergonomics in accordance with MWI 1840.1.

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CHAPTER 19. Hearing Conservation

It is MSFC policy to conduct operations in such a manner as to minimize unprotected exposure to noise above the criterion sound level (85 Decibels- A-weighted (dBA) or where the environmental impulse noise level is at or above 140 dB peak C or linear) and to proactively support the Hearing Conservation Program's (HCP's) primary goal of preventing noise-induced hearing loss among employees, contractors, and visitors. Noise-induced hearing loss is a serious threat to people exposed to hazardous noise levels at work or at home. Loss of hearing can occur from exposure to impulse or impact noise as well as from exposure to steady-state (continuous/intermittent) noise. The hearing loss may be temporary or may become permanent through repeated unprotected exposure to intense noise. Hearing loss caused by noise exposure is entirely preventable. Therefore, concerted preventive efforts are warranted to ensure the hearing of employees is conserved.

19.1 SMA Directorate shall (when notified by EEOH that an employee has met the criteria for an OSHA recordable hearing loss) enter the appropriate information into tracking systems in accordance with MWI 8621.1.

19.2 Office of Procurement shall prepare and include the necessary provisions of the Hearing Conservation Program in any contract under which contractor employees are assigned to onsite MSFC hazardous or potentially-hazardous noise areas and for ensuring that "Buy Quiet and Quiet by Design" provisions are included in all contracts and in the purchase of new equipment, as appropriate.

19.3 MSFC onsite personnel shall comply with MWI 1840.1.

19.4 Any audiograms performed outside of the MSFC Medical Center that are to be included in medical records maintained by the MSFC Medical Center, shall be administered by a physician board certified by the American Board of Otolaryngology with the assistance of an audiologist.

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Chapter 20. Occupational Medicine

Occupational Medicine encompasses medical services available to MSFC employees which include, but are not limited to; physical exams, job exposure determinations, injury and illness evaluations, eliminating or minimizing employee exposure to bloodborne pathogens and Automated External Defibrillator (AED) training. These services are provided in accordance with:

- NPR 1800.1, NASA Occupational Health Program Procedures
- MPR 1810.2, Automated External Defibrillator (AED) Program
- MWI 8550.1, Waste Management
- MWI 8621.1, Mishap and Close Call Reporting and Investigation Program
- MWI 8715.15, Ground Operations Safety Assessment Program
- OSHA standards found at 29 CFR Parts 1910, 1926 and 1960.

20.1 MSFC onsite personnel shall adhere to these programs in accordance with MWI 1800.1.

20.2 Supervisors shall:

20.2.1 Report any job-related illness or injury in accordance with MPR 8715.1, Marshall Safety, Health, and Environmental (SHE) Program and MWI 8621.1.

20.2.2 Notify the MSFC Medical Center when it is considered likely that employees may have been exposed to serious infectious diseases, toxic substances, or physical hazards that concern employees at their workplace and provide a list of potentially exposed employees to the MSFC Medical Center.

20.2.3 Ensure employees working in job categories requiring monitoring or medical surveillance receive their annual mandatory physical exam at the MSFC Medical Center.

20.3 Employees shall:

20.3.1 Report any job-related illness or injury in accordance with MPR 8715.1 and MWI 8621.1.

20.3.2 Notify their supervisor and the MSFC Medical Center when it is considered likely they may have been exposed to serious infectious diseases, toxic substances, or physical hazards within their workplace.

20.3.3 Report to Medical Center for scheduled mandatory physical exam appointments or reschedule the exam should a conflict arise.

20.4 MSFC Office of Human Capital or a Contractor's Human Resources Office shall:

20.4.1 Upon hiring a minor, obtain written consent of parent(s) or legal guardian using MSFC

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Form 4243, Medical Release for Treatment of a Minor authorizing treatment to their minor child and furnish it to the MSFC Medical Center Director.

20.4.2 Inform potential employees prior to an examination at the MSFC Medical Center when their selection is contingent upon medical findings.

20.4.3 Make arrangements with the MSFC Medical Center for the required examination.

20.5 Office of Procurement shall:

20.5.1 Ensure existing or new on-site contracts which involve tasks requiring applicable personnel to obtain mandatory physical exams indicate that those exams shall be provided by the MSFC Medical Center or otherwise stated in the contract.

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CHAPTER 21. Biohazardous Materials

Biological materials are classified as non-hazardous and biohazardous. Biohazardous materials may include bacteria, fungi, protozoa, viruses, cell cultures, recombinant Deoxyribonucleic Acid (DNA), and others. Plants, animals, and some inanimate objects may also be vectors of biohazardous agents. Biohazardous materials are further classified by Biosafety Level (BSL) as defined in *Biosafety in Microbiological and Biomedical Laboratories* (latest edition). This document was developed and distributed by the U.S. Department of Health and Human Services, the Centers for Disease Control and Prevention (CDC), and the National Institutes of Health (NIH). Biohazardous materials are classified as BSL-1 through BSL-4 risks. BSL classifications can be accessed via the CDC Web site at www.cdc.gov. The World Health Organization (WHO) recognizes biohazardous materials and also developed and distributed a document addressing biosafety issues. The *Laboratory Biosafety Manual* (latest edition) developed by the WHO classifies biohazardous materials into risk groups ranging from risk group 1 through risk group 4. Subtle differences exist between the WHO and the CDC/NIH documents, but assessment approach and conclusions are compatible. These guidelines are widely used by academia, government, and industry in the U.S., and internationally. For the purposes of grouping and assessing biosafety at MSFC, BSLs 1 through 4 are used to classify biological agents.

21.1 MSFC onsite personnel shall submit all projects, activities, experiments, etc., utilizing biological material(s) to EEOH for assessment. EEOH designates a BSL to each identified biohazardous material. The assessments enable the principal investigator to ensure that the appropriate facility, personal protective equipment, and proper handling techniques are used when handling the identified biohazardous material(s).

21.2 The following biological agents are prohibited at MSFC:

21.2.1 Prions causing spongiform encephalopathy.

21.2.2 Any BSL 4 material.

21.2.3 Selected agents covered under 42 CFR Part 73, Select Agents and Toxins; Subchapter F, Quarantine, Inspection and License.

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APPENDIX A

DEFINITIONS

Air Emissions. Release of substances to the air that are known to cause, or reasonably anticipated to cause, death, injury, or serious adverse effects to human health or the environment.

Chemical Warfare Material. Material that uses the toxic properties of chemical substances to kill, injure, or incapacitate an enemy.

Hazardous Waste. A waste or combination of wastes that can pose a substantial or potential hazard to human health or the environment when not properly managed; possesses at least one of four characteristics (ignitable, corrosive, reactive, or toxic) or appears on special EPA lists; includes toxic waste, spilled materials, and unused chemicals.

MSFC Onsite Personnel. Includes both civil servants and contractors located onsite at MSFC; excludes the NSSTC.

Solid Waste. Garbage, refuse, sludge, and other discarded solid materials, including solid waste materials resulting from industrial, commercial, and agricultural operations, and from community activities.

Special Waste. A waste that does not fall into the categories of hazardous or nonhazardous waste. Examples are spray-on foam insulation, media blasting, batteries, universal waste, and used oil.

Stormwater. Any runoff water or contained water resulting from rain.

UXO. Chemical and conventional military munitions that have been primed, fused, armed, or otherwise prepared for action, and have been fired, dropped, launched, projected, or placed in such a manner as to constitute a hazard to operations, installation, personnel, or material, and remain unexploded either by malfunction, design, or other cause.

Universal Waste. Those wastes that would normally be regulated as hazardous wastes, but that have been classified as “universal wastes” with alternative management standards. Examples include batteries, pesticides, mercury-containing thermostats, and lamps.

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APPENDIX B

ACRONYMS

<u>ADEM</u>	Alabama Department of Environmental Management
<u>AED</u>	Automated External Defibrillator
<u>AMCOM</u>	Army Material Command
<u>AS01</u>	Organization code for MSFC Office of Center Operations
<u>AS10</u>	Organization code for MSFC Environmental Engineering and Occupational Health Office
<u>AS20</u>	Organization code for MSFC Facilities Management Office
<u>BSL</u>	Biosafety Level
<u>CAA</u>	Clean Air Act
<u>CDC</u>	Centers for Disease Control and Prevention
<u>CERCLA</u>	Comprehensive Environmental Response, Compensation, and Liability Act
<u>CFR</u>	Code of Federal Regulations
<u>CRM</u>	Cultural Resource Management
<u>CWA</u>	Clean Water Act
<u>CWM</u>	Chemical Warfare Material
<u>DA</u>	Department of Army
<u>dBA</u>	Decibels- A-weighted
<u>DNA</u>	Deoxyribonucleic Acid
<u>EEOH</u>	Environmental Engineering and Occupational Health Office

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<u>EPA</u>	Environmental Protection Agency
<u>EPCRA</u>	Emergency Planning and Community Right-to-Know Act
<u>ESA</u>	Endangered Species Act
<u>FIFRA</u>	Federal Insecticide, Fungicide, and Rodenticide Act
<u>FMO</u>	Facilities Management Office
<u>HAP</u>	Hazardous Air Pollutant
<u>HAZMAT</u>	Hazardous Material
<u>HAZWOPER</u>	Hazardous Waste Operations and Emergency Response
<u>HCP</u>	Hearing Conservation Program
<u>LEL</u>	Lower Explosive Limit
<u>MAF</u>	Michoud Assembly Facility
<u>MPD</u>	Marshall Policy Directive
<u>MPR</u>	Marshall Procedural Requirements
<u>MSFC</u>	Marshall Space Flight Center
<u>MWI</u>	Marshall Work Instruction
<u>NASA</u>	National Aeronautics and Space Administration
<u>NEPA</u>	National Environmental Policy Act
<u>NIH</u>	National Institutes of Health
<u>NIOSH</u>	National Institute for Occupational Safety and Health
<u>NPD</u>	NASA Policy Directive
<u>NPDES</u>	National Pollutant Discharge Elimination System
<u>NPR</u>	NASA Procedural Requirements
<u>NRHP</u>	National Register of Historic Places

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<u>NRMP</u>	Natural Resources Management Plan
<u>O₂</u>	Oxygen
<u>ODS</u>	Ozone Depleting Substance
<u>OSHA</u>	Occupational Safety & Health Administration
<u>PCB</u>	Polychlorinated Biphenyls
<u>PUC</u>	Potentially Unstable Chemicals
<u>RCRA</u>	Resource Conservation and Recovery Act
<u>SMA</u>	Safety & Mission Assurance
<u>SDS</u>	Safety Data Sheet
<u>SHE</u>	Safety, Health, & Environmental
<u>SHetrak</u>	Safety, Health, & Environmental Finding Tracking System
<u>T&E</u>	Threatened and Endangered
<u>TSCA</u>	Toxic Substances Control Act
<u>USFWS</u>	U.S. Fish and Wildlife Service
<u>UXO</u>	Unexploded Ordnance
<u>WHO</u>	World Health Organization
<u>WMSD</u>	Work-related Musculoskeletal Disorders

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Appendix C (Reserved for Verification Matrix)

None.

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APPENDIX D

RECORDS

D.1 The following environmental records are maintained according to the “List of AS10 Environmental Records” located at the following link:

<https://explornet.msfc.nasa.gov/community/msfc/office-of-center-operations/as10>

D.1.1 Environmental training records for civil service employees (reference Chapter 2)

D.1.2 Environmental training records for contractor employees (reference Chapter 2)

D.1.3 Safety Data Sheets (reference Chapter 9)

D.1.4 Pesticide Application and Disposal Records (reference Chapter 9)

D.1.5 MSFC Form 4464, “CERCLA Site Access Control Checklist” (reference Chapter 10)

D.1.6 NEPA Construction Preliminary Evaluation (reference Chapter 11)

D.1.7 NEPA Operational Preliminary Evaluation (reference Chapter 11)

D.2 The following occupational health records are maintained according to the “List of AS10 Occupational Health Records” located at the following link:

<https://explornet.msfc.nasa.gov/community/msfc/office-of-center-operations/as10>

D.2.1 Non-Resident Contractor Certification of Training (reference Chapter 17)

D.2.2 Non-Resident Contractor Confined Space Entry Procedures (reference Chapter 17)

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APPENDIX E

REFERENCES

E.1 MSFC Site Management Plan (<https://explornet.msfc.nasa.gov/docs/DOC-25632>)

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APPENDIX F

SHELF LIFE OF UNSTABLE CHEMICALS

Group A- Chemicals that form explosive levels of peroxides without concentration

Discard after three months from purchase date

Butadiene ^(1,3)	Sodium Amide
Chloroprene (2-chloro-1,3-butadiene) ^(1,3)	Tetrafluoroethylene
Divinyl acetylene	Vinyl ether
Isopropyl ether	Vinylidene chloride
Potassium Metal	

Group B-Chemicals that form explosive levels of peroxides on concentration

Discard after one year from purchase date

Acetal	4-Heptanol
Acetaldehyde	2-Hexanol
Benzyl alcohol	Hydrogen Peroxide (30-50%)
2-Butanol	Isopropyl benzene
Cyclohexanol	Methyl acetylene
Cyclohexene	3-Methyl-1-butanol
2-Cyclohexen-1-ol	Methyl cyclopentane
Cyclopentene	Methyl isobutyl ketone
Decahydronaphthalene	4-Methyl-2-pentanol
Diacetylene	2-Pentanol
Dicyclopentadiene	4-Penten-1-ol
Diethylene glycol dimethyl ether	1-Phenylethanol
Dioxane	2-Phenylethanol
Ethylene glycol dimethyl ether	Tetrahydrofuran
Ethyl ether	Tetrahydronaphthalene
Furan	

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Group C- Chemicals which may autopolymerize as a result of peroxide accumulation
Discard inhibited chemicals after one year from purchase date; discard uninhibited
chemicals 24 hours after opening or one year from purchase date, whichever comes first

Acrylic acid ⁽²⁾	Styrene
Acrylonitrile ⁽²⁾	Tetrafluoroethylene
Butadiene ^(1,3)	Vinyl acetate
Buten-3-yne	Vinyl chloride
Chloroprene ^(1,3)	Vinylidene chloride
Chlorotrifluoroethylene	2-Vinyl pyridine

Other materials that may become unstable and are to be discarded after one year from purchase date

Sodium metal	Picric Acid
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*NOTE: This list is **not inclusive** of all Potentially Unstable Chemicals (PUC) at MSFC.
If other chemicals are identified, contact EEOH for an amendment to this table.*

Reference Notes:

1. When stored as a liquid monomer.
2. Although these form peroxides, no explosions involving these monomers have been reported.
3. Also stored as a gas in gas cylinders.